First Session Summary

"Innovating Higher Education by Networking: Toward the Building of International Education Networks in the 21st Century"

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1. Objectives of the session

The recent advancement of network technologies is changing the educational environment in universities. The objective of the first session was to discuss problems which we encounter when newly developed networked education is introduced, and to study the keys for the effective networked education.

2. Session Structure

Three speakers, Prof. Fernandez ("TEN: Trans-European Tele-education Network"), Prof. Seaton ("Computer Assisted Lifelong Learning(CALL) Network"), and Prof. Calvert ("Towards a Global Virtual Learning Environment") presented real examples of networked education and reviewed the actual problems following their practical operations of these education systems. The fourth speaker, Prof. Tachi ("Infrastructure, Collaboration and Strategic Approach"), focused on the effects and policy of multimedia technologies in universities.

In his talk on "Inter-university Satellite Network: SCS", chairman Kondo briefly appended the previous lectures with a review of the Japanese Inter-university network SCS. Five minutes of questions and answers followed each 20 minute lecture, and about 30 minutes of general discussion with the participants on the floor followed after the last lecture. The session was concluded by the Chairman's brief summary of the discussion. The session was conducted in cooperation with Tokyo university, with Prof. Tachi participating remotely form the Tokyo university SCS site. The entire session was net-casted to CRL and about 30 SCS sites, and was additionally made available to the Internet.

3. Discussion in the Session

Prof. Fernandez introduced TEN (Trans-European Education Network) operated by the Madrid Institute of Technology in the EC. Through TEN, proper technologies and proper educational models are studied. He emphasized that the "mixed network" combining a satellite system and terrestrial system was cost effective. He also talked about optimum class sizes in networked education. The easy operation of the system and the

transmission function of each site are important in the educational model on networks. A multi-language problem is an inevitable and important problem for the international education exchange system.
Prof. Seaton introduced the CALL (Computer-assisted Lifelong Learning) system currently being promoted by the Thomas Edison State College. Attempts are being made to the realize all the functions of a faculty in the computer network.. Various media including video, CD-ROM, Internet, etc., are integrated to make tele-education easy to access and economically feasible for the students. Not only computer conferencing but also other online services are inevitable resources to assist students in remote learning. Prof. Seaton particularly emphasized the importance of the self-evaluation system for remote learners.

Prof. Calvert analyzed the learning theories in the virtual university based on his experience in the Virtual-U Project at Simon Fraser University. According to constructivist theory, a multimedia environment is effective because analysis, synthesis, problem solving, etc., are efficiently supported by Multimedia techniques. How teachers teach is a new and important problem in virtual universities. Prof. Calver emphasized the importance of simulation and collaboration software in the multimedia learning environment, and pointed out the effectiveness of asynchronous communication in this environment.

Prof. Tachi analyzed the effects of information technology on education. He mentioned that the quality can be expected to improve when information technologies are introduced in the classroom, and that a rich learning environment will be provided when they are introduced in the tele-education. He emphasized that since technologies are in the stage of development, universities should participate in the construction of the information infrastructure. He also discussed the importance of standardization for effective collaboration, and the need for nationwide or worldwide collaboration.

Prof. Kondo introduced the inter-university satellite network SCS, stressing the importance of the equality among universities in education exchange, cost-effectiveness, and easy operation.

The two main focal points of the general discussion were cost-effectiveness and potentials for cooperation. It was pointed out , for example, that virtual universities are cost effective since no buildings were necessary. The effects of the technologies were agreed upon. Though there were of course requests for cost reductions, there was a general consensus that the benefits and needs are a more important consideration in discussing the use of multimedia technologies. We can disregard space and time difference to a good extent using these technologies. There was also a discussion on the need to clarify and respect the targets of education and society.

The importance of collaboration was fully supported, and it was agreed that collaboration was useful for the standardization of methods, materials, media, etc., as well as the gathering of contents for networked and multimedia education. There was a comment that wide usability leads to cost effectiveness. It was pointed out that the exchange of information or know-how concerning how to use, operate, or manage networks or

multimedia in education was useful for all the people concerned. The importance of the human network for efficient collaboration was also pointed out.

4. Conclusions

Experiences in the construction and operation of concrete network-based education in Europe, USA, Canada, and Japan employing a variety of network technologies including satellite, ISDN, and the Internet were presented. These examples showed clearly the capabilities of networks and other technologies to innovate education. The participants could see that the issues learned at each experience were commonly useful to other educational institutions. Collaboration among people in different fields of higher education is crucial for the construction, operation, and application of the multimedia education system.